

SUPPORT FOR AMENDMENTS

Claims 8, 13-18 and 21-23 have been canceled. The claims have been amended for clarity. Support can be found in the claims as originally filed. Additional support for the amendment to claim 1 can be found in claim 8 as originally filed and in the specification at page 3, lines 7-11 and at page 3, lines 27-29. Additional support for the amendments to claim 9 can be found in the specification at page 35, lines 27-34. Claims 24-30 have been newly added; support can be found in the specification.

- Claims 24-25: page 3, lines 27-29;
- Claims 26-27: page 29, lines 36-41;
- Claims 28-29: page 3, lines 9-11 & page 37, lines 29-31; &
- Claim 30: page 4, lines 20-28.

No new matter has been added.

REMARKS/ARGUMENTS

The present invention relates to processes for dyeing leather articles (*e.g.* shoes, jackets) by treating the leather article with a float containing dye(s). The dye(s) has/have functional group(s) A. The pH of the float is from 8.5 to 11; the significance thereof is discussed below.

Rejection in view of *Gisler & Papa et al.*

The rejection of claims 1-12 and 19-20 under 35 U.S.C. § 103(a) in view of WIPO Publication 2003/031520 (*Gisler*) and U.S. Patent 4,248,776 (*Papa et al.*) is respectfully traversed. No basis exists in either of these cited references for alleging that these cited reference disclose treating a substrate with a float containing a dye, ***where the float exhibits an alkaline (i.e. basic) pH—in particular 8.5-11.***

At the outset, *Gisler* discloses highly basic conditions for applying the dye to a cotton substrate. See, e.g. "Use Prescription A", where large amounts of sodium bicarbonate is added to the float, which would ensure a pH of 12 to 13. This pH exceeds the range of the present claims. The pH of the present claims (8.5–11) ensures that the dye is fixed to the leather:

The float pH customarily does not exceed pH 11 and preferably pH 10.5. ... The alkaline pH ensures that the dye is fixed on the leather, since, under these conditions, the group A will react with the amino groups of the leather to form a covalent bond.

Page 29:12–16 of the present specification. Moreover, highly basic conditions can damage the leather substrate:

Owing to the dyeing conditions employed, i.e., ***high pH*** in conjunction with long dyeing times of 7 h or more, this process can only be used for dyeing chamois leather, which is known to be stable to alkaline. ***With other leather varieties, the dyeing conditions described cause damage to the leather.***

Page 2: 14-18 of the present specification. Applicants have shown that dying leather at pH's of 8.5–11 is effective for bonding the dye to the leather substrate. Dye fixation to the leather substrate is at least 85% under the conditions of the present claims (see claims 28 & 29).

In fact, the Office concedes that *Gisler* does not disclose that substrates are treated by a float having a pH of 7.5–11 (see page 6 of the Office Action).¹ The Office turns to *Papa et al.* to provide this characteristic, referring to Col. 2:66 – Col. 3:5. However, this section of *Papa et al.* relates to the processes of making the dyes disclosed therein (emphasis added):

(C) Coupling

The tetrazo, after correction of its pH to about 9 with 13.5 parts of 36°. Be caustic soda, in 1 hour was poured over the coupler brought to 2°-5°C. by the help of ice. During the pouring, the pH value was maintained between 8 and 8.5 by the addition of 14.5 parts of sodium carbonate brought to solution in 60 parts of water. ***Thereby was obtained an unfilterable black mass*** (vol.=1700) which was separated by spray-drying.

¹ Claim 1 now amended so that the pH is 8.5 to 11.

This section states that the final step for making the dye initially occurs at a pH of about 9 and then at a pH between 8 to 8.5. The product is formed upon the step recited in the quote recited above, then:

There were obtained 110 parts of a dry product ***which dyes leather*** in a black shade with a good affinity and penetration. It proved particularly suited for dyeing 're-tanned' leather, and it showed a good fastness to light and washings.

Thus, *Papa et al.* discloses pHs for solutions where the dye is made, ***not where the dye is applied***. Accordingly, Applicants respectfully submit that the Office has not established a *prima facie* case of obviousness because neither cited reference discloses contacting leather with a float containing a dye, where the float maintains a pH of 8.5–11.

In the discussion of the invention, Applicants note that fixing the dye to the leather article in sufficient amounts is a problem:

In summary, existing processes for dyeing leather with reactive dyes do not provide good fixation yields of 85% or higher at medium to high depths of shade. The fixation yields of 70 to 75% achieved in the prior art are not sufficient for high wet- and perspiration fastnesses and good migration stability since the unattached dye has to be laboriously washed off to solve the problems described here.

Page 2, lines 21–25 of the present specification. Applicants have discovered that contacting a leather article with a float containing a dye, where the float maintains a pH of 8.5–11, is necessary for fixation yields of 85% or greater. Applicants note that dyeing the article(s) using the floats of the present claims can result in fixation yields of at least 85% for a relatively quick dyeing time of at most 4 hours (see claims 27 & 28):

In fact, dyeing and fixation proceeds so rapidly under these conditions that a short dyeing time of 4 h or less is sufficient to achieve adequate color intensity and a high fixation of 85% or more.

Page 3, lines 9-11 of the present specification. Moreover, Applicants note that under stronger alkaline conditions (*e.g.* pH of 9.5 to 11), dyeing time can take no longer than 2 hours (see claims 26 & 27):

Especially at strongly alkaline pH values in the range from 9.5 to 11 and especially from 9.5 to 10.5 the dyeing time is preferably not more than 2 h, for example in the range from 0.5 to 2 h.

Page 29, lines 39-41 of the present specification.

Neither *Gisler* nor *Papa et al.* contain any disclosure that at least 85% of the dye applied to the leather articles is affixed to the leather. There is no disclosure that such efficiencies are attainable for dyeing periods of at most 4 hours (as noted above). Moreover, there is no disclosure that more alkaline conditions can reduce the amount of dyeing time, as demonstrated by the Applicants in the present invention. Accordingly, neither *Gisler* nor *Papa et al.* would suggest to one of ordinary skill in the art to dye leather articles with a float that contains a dye while maintaining the float's pH at 8.5–11.

Accordingly, the rejection is no longer tenable and should be withdrawn.

Rejection in view of *Gisler*, *Papa et al.* & *Berenguer*

The rejection of claims 19 and 20 under 35 U.S.C. 103(a) in view of *Gisler*, *Papa et al.*, and Re-issued U.S. Patent RE38,531 E (*Berenguer*) is respectfully traversed for the same reasons given above. In addition, *Berenguer* states that the **dye-bath** disclosed therein is maintained at a pH of 8 to a pH of 3 (Col. 15, lines 27-28).

Furthermore, *Berenguer* states that, for the conclusion of the dyeing process, the pH is lowered by adding an acid such as acetic acid or formic acid (see Col. 15, lines 32-36). This process is exactly the opposite of the presently claimed processes, where the pH can be **raised**

as the dyeing process proceeds (see claims 1 & 9). Thus, *Berenguer* "teaches away" from the presently claimed processes.

Further still, Applicants refer to the enclosed Test Report, a similar version of which was filed during International Preliminary Examination of PCT/EP04/012231. In this Test Report, Applicants have shown that a representative dye of *Berenguer* ("Dye C") does not exhibit perspiration fastness:

Two marine blue leathers were obtained. The leather dyed with the dye B exhibited an excellent perspiration fastness, whereas the leather dyed with the dye C showed a low perspiration fastness.

Similar results are shown in Table 2 of the Test Report. Applicants have enclosed a copy of the Test Report for the Examiner's consideration.

Even further still, there is no disclosure of any dye fixation amounts. Thus, *Berenguer* does not remedy the deficiencies of *Gisler*, discussed above.

Accordingly, the rejection is no longer tenable and should be withdrawn.

Obviousness-type double patenting rejection

The provisional rejection of Claims 1-12 and 19-20 under the judicially created doctrine of obviousness-type double patenting over claims 16-30 of copending U.S.

Application No. 11/628,659 (U.S. '659) is respectfully requested to be held in abeyance until allowable subject matter has been identified. However, Applicants note MPEP § 804(I)(B.)(1.), which states:

If a "provisional" nonstatutory obviousness-type double patenting (ODP) rejection is the only rejection remaining in the earlier filed of the two pending applications, while the later-filed application is rejectable on other grounds, the examiner should withdraw that rejection and permit the earlier-filed application to issue as a patent without a terminal disclaimer.

If "provisional" ODP rejections in two applications are the only rejections remaining in those applications, the examiner should

withdraw the ODP rejection in the earlier filed application
thereby permitting that application to issue without need of a
terminal disclaimer.

Applicants note that U.S. '659 is the national stage application of international application PCT/EP05/006107, which was filed on June 7, 2005 and entered the national stage on December 6, 2006. In contrast, the present application has *an effective filing* date of October 28, 2004, which is the date on which the international application of the present application was filed. Thus, the present application is earlier filed application, and the rejection under obviousness-type double patenting should ultimately be withdrawn upon satisfying the requirements described in the MPEP, quoted above.

Other matters

The rejection of claims 1 and 9 under 35 U.S.C. § 112, 2nd ¶, has been obviated by amendment. Accordingly, the rejection is no longer tenable and should be withdrawn.

The objection to claim 1 has been obviated by amendment. Accordingly, the objection is no longer tenable and should be withdrawn.

Conclusion

Applicants respectfully submit that the above-identified application is in condition for allowance. Notification thereof is requested.

Respectfully submitted,

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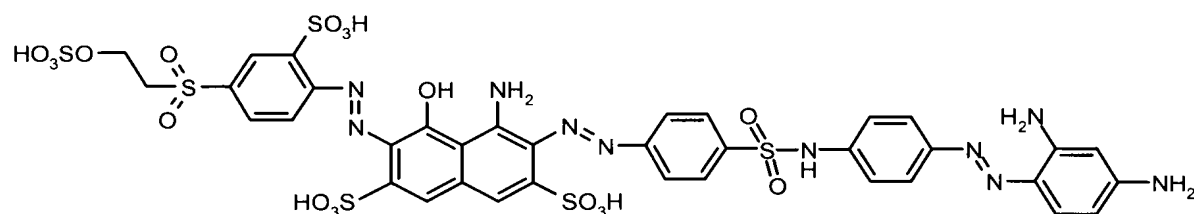
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Test report:

Example 1:

Chrom-tanned cattlehide leather was dyed with the dye A according to the following dyeing instruction 1.1 at a pH-value of 9.2-9.9. For comparison purposes the leather was also dyed with the dye A according to the dyeing instruction 1.2 at a pH-value of 5,4. The dyeing instruction 1.2 is an instruction that is optimized for conventional leather dyeing.

Dye A (according to the invention):



Dyeing instruction 1.1

A piece of 100 parts by weight of a conventionally chrom-tanned cattlehide leather 1.8 mm in shaved thickness was washed at 35°C for 10 minutes in a drum filled with 300 parts of water and subsequently neutralized at 40°C for 120 minutes in a float consisting of 150 parts of water, 2 parts of sodium formate, 1 part of sodium acetate and 2.2 parts of sodium bicarbonate. The deacidifying float then had a pH of 7.2. Afterwards 4 parts of the dye A were added to the deacidifying float followed by dyeing at 40 °C for 30 minutes at pH of 6.9. A total of 4.5 parts of soda were added a little at a time to set the float pH between 9.2-9.9 for fixation and the leather was drummed at 40°C for 75 minutes. This was followed by three 20 minute washes in 300 parts of water at 40°C. A pH of 3.9 was set by adding 200 parts of water and 1.2 parts of formic acid. The leather thus dyed was retanned for 30 minutes at 30°C in a freshly set float consisting of 100 parts of water and 2 parts of the polymeric tanning material G15. Then 2 parts of the hydrophobicizing fatliquor H3 were added. Following a drumming time of a further 30 minutes 5 parts of the sulfone type tanning material G7 and 4 parts of the resin type tanning material G11 were added before drumming for a further 60 minutes. The retanning float was mixed with 4.5 parts of the fatliquor F5 and 0.5 part of the fatliquor F8 which was followed by drumming for 40 minutes. This was followed by acidification to pH 3.6 by adding 1.6 parts of formic acid and drumming for

40 minutes. The dyed, retanned and fatliquored leather was washed for 10 minutes with 300 parts of water at 20°C and subsequently set out, suspension dried at room temperature overnight, conditioned, staked and strained.

The leather obtained had a deep black color and an excellent perspiration fastness.

Dyeing instruction 1.2

A piece of 100 parts by weight of a conventionally chrom-tanned cattlehide leather 1.8 mm in shaved thickness was washed at 35°C for 10 minutes in a drum filled with 300 parts of water and subsequently neutralized at 40°C for 120 minutes in a float consisting of 150 parts of water, 2 parts of sodium formate, 1 part of sodium acetate and 2.2 parts of sodium bicarbonate. The deacidifying float then had a pH of 5.4. The leather was retanned for 30 minutes at 30°C in a freshly set float consisting of 100 parts of water and 2 parts of the polymeric tanning material G15. Then 2 parts of the hydrophobicizing fatliquor H3 were added. Following a drumming time of a further 30 minutes 5 parts of the sulfone type tanning material G7, 4 parts of the resin type tanning material G11 and 0.5 parts of sodium formate were added before drumming for a further 10 minutes. The retanning float was mixed with 4 parts of the dye A and the leather was dyed at pH 5.4 for 150 minutes at 30°C. Then, 80 parts of water at 70°C were added and dyeing was continued at 50°C for further 20 minutes. This was followed by acidification to pH 4.0 with 1 part of formic acid and drumming for 60 minutes. Following a washing time of 10 minutes using 200 parts of water at 40°C the leather was fatliquored at 55°C for 40 minutes using a freshly set float consisting of 100 parts of water and 4.5 parts of the fatliquor F5 and 0.5 parts of the fatliquor F8. This was followed by acidification to pH 3.6 with 1.6 parts of formic acid and drumming for 70 minutes. The dyed, retanned and fatliquored leather was additionally washed for 10 minutes with 300 parts of water at 20°C and subsequently set out, suspension dried at room temperature overnight, conditioned, staked and strained.

The leather obtained had a black color of medium depth of shade and exhibited a low perspiration fastness.

The perspiration fastnesses of the leathers obtained according to the dyeing instructions 1.1 and 1.2 were measured pursuant to DIN EN ISO 11641. To this end the bleeding of the dye from the leather onto an interfacing fabric was investigated. The assessment of the interfacing fabric was carried out using the 5-step gray scale for rating the bleeding according

to DIN 54002, with 1 standing for severe bleeding and 5 for no bleeding. The results are summarized in Table 1.

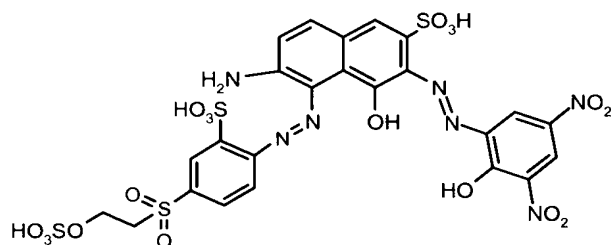
Table 1:

Interfacing fabric	spun acetate	bleached cotton	spun polyamide	spun polyester	spun polyacryl	worsted wool	leather
dye A, instruction 1.1	5	4-5	5	5	5	5	
dye A, instruction 1.2	3	1	2	2-3	2	1	

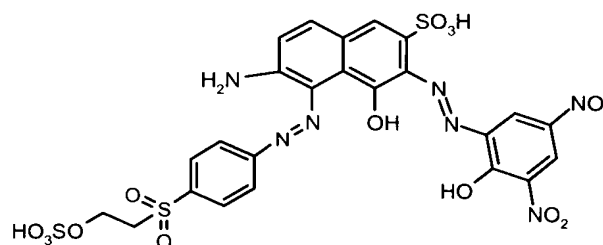
Example 2:

For comparison purposes a chrom-tanned cattlehide leather was dyed with the dye B of the present invention and the dye C of the prior art, respectively, according to the following dyeing instruction 2.1 at a pH-value of 9.5-9.9. Dye C differs from dye B only by missing the sulfonic acid group at the activating group. 8 parts of dye B and 7.2 parts of dye C were employed, which corresponds to an equimolar employment of the two dyes.

Dye B (according to the invention):



Dye C (according to the prior art):



Dyeing instruction 2.1

A piece of 100 parts by weight of a conventionally chrom-tanned cattlehide leather 1.4 mm in shaved thickness was washed at 30°C for 10 minutes in a drum filled with 200 parts of water and subsequently neutralized at 35°C for 30 minutes in a float consisting of 80 parts of water, 1.5 parts of sodium formate and 3.5 parts of sodium bicarbonate. Then, 7.2 parts of the dye C or 8.0 parts of dye B, respectively, were added to the deacidifying float followed by dyeing at 35 °C for 40 minutes. A total of 6.5 parts of a solution of soda in water (w/w 1:9) were added a little at a time to set the float pH between 9.5-9.8 for fixation and the leather was drummed at 35°C for 65 minutes. This was followed by one 15 minute wash in 300 parts of water at 40°C. A pH of 4.6 was set by adding 200 parts of water and 2 parts of formic acid. The leathers thus dyed were fatliquored for 15 minutes at 40°C in a freshly set float

consisting of 100 parts of water and 1.5 parts of the hydrophobicizing fatliquor H3. After addition of 5 parts of the polymeric tanning material G18 retanning was carried out for 15 minutes at 40°C. Then 2 parts of the polymeric tanning material G19 were added to the float. After drumming for 15 minutes 2 parts of the polymeric tanning material G15 were added, followed by further 15 minutes of drumming. The retanning float was mixed with 4.5 parts of the fatliquor F6 and the leather was fatliquored for 60 minutes at 45°C. This was followed by acidification to pH 3.5 by adding 3 parts of formic acid and drumming for 40 minutes. The dyed, retanned and fatliquored leathers were washed for 10 minutes with water at 20°C and subsequently set out, suspension dried at room temperature overnight, conditioned, staked and strained.

Two marine blue leathers were obtained. The leather dyed with the dye B exhibited an excellent perspiration fastness, whereas the leather dyed with the dye C showed a low perspiration fastness.

The perspiration fastnesses of the leathers obtained according to the dyeing instructions 2.1 were measured pursuant to DIN EN ISO 11641. To this end the bleeding of the dye from the leather onto an interfacing fabric was investigated. The assessment of the interfacing fabric was carried out using the 5-step gray scale for rating the bleeding according to DIN 54002, with 1 standing for severe bleeding and 5 for no bleeding. The results are summarized in Table 2.

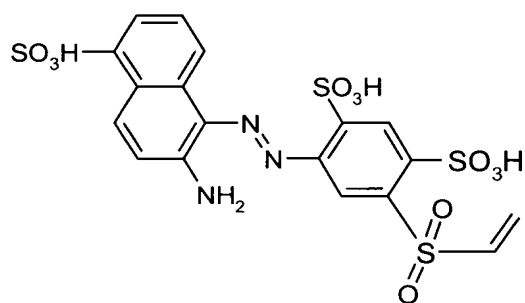
Table 2:

Interfacing fabric	spun acetate	bleached cotton	spun polyamide	spun polyester	spun polyacryl	worsted wool	leather
dye B	5	4-5	4-5	5	5	4	
dye C	4-5	2	1-2	4-5	4-5	1-2	

Example 3:

Organically tanned cattlehide leather was dyed with the dye E according to the following dyeing instruction 4.1 at a pH-value of > 12 (in accordance with the prior art). For comparison purposes the dyeing was repeated at pH 10 (dyeing instruction 4.2, in accordance with the invention).

Dye D (according to the invention):



Dyeing instruction 3.1

A piece of 100 parts by weight of a conventionally organically tanned cattlehide leather 1.0 mm in shaved thickness was washed at 30°C for 10 minutes in a drum filled with 200 parts of water and subsequently dyed at 30°C for 60 minutes at pH 4.4 in a float consisting of 150 parts of water, 2.0 parts of the auxiliary HM1 and 5.0 parts of the dye D. A total of 100 parts of a 1:1 mixture of 15% aqueous soda solution and 25% aqueous caustic soda solution were added a little at a time to set the float pH to 12.4-12.5 and the leather was then drummed at 40°C for 60 minutes. This was followed by six 10 minute washes in 200 parts of water at 40°C. A pH of 4.9 was set by adding 200 parts of water and 0.62 parts of formic acid. The leather broke down into pieces during drumming. Retanning was carried out as follows: The leather thus dyed was retanned in a freshly set float comprising of 100 parts of water, 2.0 parts of the polymeric tanning material G18 and 2 parts of the fatliquor F1 at 35°C for 30 minutes. The float was then admixed with 15 parts of the tanning material G8, 8 parts of polymeric tanning material G18, and 10 parts of the vegetable tanning material G21 and retanned for further 110 minutes. The leather was subsequently fatliquored in the retanning float with 8 parts of the fatliquor F1 and 2 parts of the fatliquor F3 at 45°C for 110 minutes. In order to deplete the fatliquoring 100 parts of water at 45°C were then added and drumming was continued for further 10 minutes. This was followed by acidification to pH 3.8 with 2.75 parts of formic acid and drumming for 50 minutes. The dyed, retanned and fatliquored leather was rinsed with 200 parts of water at 20°C for 10 minutes and, to the extent possible, the leather pieces were subsequently set out, suspension dried at room temperature overnight, conditioned, staked and strained.

The leather thus obtained was broken down.

Dyeing instruction 3.2

A piece of 100 parts by weight of a conventionally organically tanned cattlehide leather 1.0 mm in shaved thickness was washed at 30°C for 10 minutes in a drum filled with 200 parts of

water and subsequently dyed at 30°C for 60 minutes at pH 4.4 in a float consisting of 150 parts of water, 2.0 parts of the auxiliary HM1 and 5.0 parts of the dye D. A total of 100 parts of 15% aqueous soda solution were added a little at a time to set the float pH to 10.0 and the leather was then drummed at 40°C for 60 minutes. This was followed by six 10 minute washes in 200 parts of water at 40°C. A pH of 4.7 was set by adding 200 parts of water and 0.62 parts of formic acid. Afterwards retanning was carried out as described in the dyeing instruction 4.1. The dyed, retanned and fatliquored leather was washed for 10 minutes with 200 parts of water at 20°C and subsequently set out, suspension dried at room temperature overnight, conditioned, staked and strained.

The red leather obtained was of good quality.